

such as that of Homer Smith is worthy of careful trial.

The Elliott Operation: Iridectomy will probably continue to be the operation of choice in acute glaucoma but it has proven far from satisfactory in the chronic forms of the disease, hence the hearty welcome with which other operative procedures have been received. Of all these newer methods, the Elliott operation finds greatest favor at present. It is comparatively simple to perform and the dangers and difficulties are much less than those of an iridectomy.

Meller reports 300 cases, in which he considered the results satisfactory. The best results were in those cases in which he was able to excise a portion of iris. He reports 20 cases lost through infection and cautions against buttonholing the flap.

Axenfeld thinks so highly of the Elliott operation that he fears that the reporting of these late infections may deter operators from using this method.

Meller has not found the Elliott operation of great value in relieving the symptoms in blind eyes but our somewhat limited experience does not confirm this opinion. For the first operations, eyes were selected which would ordinarily be considered hopeless. In none of these patients did enucleation become necessary and all were freed from pain. One patient, a victim of heart trouble, had a glaucoma that was secondary to an intra-ocular hemorrhage. Another patient, a young woman who had sustained an injury to the eye many years prior, was suffering greatly from pain, the eyeball was very hard and the corneal epithelium had exfoliated in large patches. Both retained painless and slightly globes. In the latter case, as the result of persistent attempts to seize the iris, a bead of vitreous protruded; nevertheless, the result was good. One patient, both of whose eyes were operated upon, has 20/30 vision though the sight of one eye had been reduced to recognition of hand movements during an acute attack.

Meller recommends a trephine 1.5 mm. in diameter and advises that a fairly large flap be made. If the iris prolapses or is found free, a peripheral section should be made but it is unsafe to make too vigorous efforts to seize it. The use of atropin for a few days, in order to prevent the formation of adhesions with blocking of the opening, is essential.

One of our patients with double glaucoma had an Elliott operation performed upon one eye and a large peripheral iridectomy upon the other. Although the tension in both eyes has remained low, the vision of the former eye has remained good whilst a small opacity in the lens of the other eye has impaired the vision. Thus far we have been fortunate in having no cases of infection, which may be due to the use of a large thick flap and care in not buttonholing it.

The last operative procedure to which I desire to call attention is the removal of the lachrymal sac. In this operation we follow the technic of Meller. We have endeavored to limit the opera-

tion to those cases in whom other and less radical measures have failed.

Simple strictures and dacryocystitis are handled by incising the canaliculus freely and passing the knife down through the nasal duct. Uthoff reasoned that it was better to submit the patient to an initial operative procedure with subsequent almost painless probing rather than to cause him to undergo the repeated torture of having probes passed through a tight stricture. The method is essentially the same as that pursued in the treatment of urethral strictures. There has seemed to be much less tendency to the recurrence of the stricture after this method than when the membrane is repeatedly irritated by the passing of large probes without incision. Even after the rupture of an abscess, incision of the stricture with gentle probing has resulted in cure, and not infrequently rupture of the sac has been prevented by the internal incision. The removal of the sac has been rendered necessary by failure of the usual methods or because of the inability of the patient to submit to the more prolonged treatment. In no case have we found the subsequent epiphora to be disturbing and in all cases there was complete cessation of discharge, though on several occasions the re-opening of the wound was found necessary by reason of failure to remove all of the mucous membrane at the first attack. The operation is practically painless after the injection of 1 c.c. of novocain containing one part in ten of 1 to 1000 adrenalin. The first portion is injected under the skin, the second deep down along the lachrymal crest, the third portion about the cupola of the sac, and the remaining portion about the nasal duct. It is not necessary to regard the tarsal tendon and the resulting scar is scarcely noticeable. It is quite essential that a firm compress be placed over the region of the sac and that it be not disturbed for several days, the bandage being removed, however, for inspection of the cornea. The operation, though somewhat difficult and tedious to perform, is a valuable addition to our methods of treatment in these cases.

THE SKIN TEST IN TYPHOID.*

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Several communications have appeared during the past six years concerning a skin test for typhoid. Different observers have used different materials and different methods in making the test and a very considerable difference of opinion exists as regard its usefulness. Wolff-Eisner,¹ did not obtain a characteristic reaction with "Ficker's Diagnosticum." Link,² using an old bouillon culture got six positive reactions in nine cases of typhoid. Deehan,³ upon 12 typhoid patients obtained a rather positive reaction. Floyd and Barker⁴ report 19 of 30 typhoids positive with 18 control cases negative. Chauffard and Taussier⁵ considered the test of little value; it was also given by controls. Gay and Force⁶ used a special "typhoidin" applied just as is tuberculin in the well-known von Pirquet

* Extract from a paper read before the California Northern District Society at Stockton, November 10, 1914.

test to investigate the formation of antibodies after immunization against typhoid with the vaccine of Gay. This "typhoidin" was made as follows: 250 c.c. of 5% glycerin bouillon was inoculated with *B. typhosus* (Dorset Army Strain No. 5) and incubated for five days. It was then reduced without filtration to one-tenth of its original volume by evaporation. This solution proved negative in 85% of persons who had had no typhoid, and positive in 95% of persons who had recovered from the disease.

In order to compare the skin reaction with the Widal test for agglutinins, all patients suffering from typhoid admitted to the Sacramento County Hospital during the past summer received a skin test at the same time the blood for Widal test was made. At first we used a suspension of dead bacilli, 100 million to 1 c.c., obtained from one of the commercial houses. One-tenth cubic centimeter (0.1 c.c.) of this bacterin was injected intradermally usually leaving a wheal about five or six m.m. in diameter. If a red maculo-papule as large or larger than the original wheal appeared between 6 and 48 hours from the time of injection, we considered the test positive. We tried this suspension of dead bacilli upon eleven patients, six typhoids with positive Widal's and five non-typhoids. In no case did a satisfactory reaction develop. Then we substituted Gay's vaccine, a suspension of sensitized and ground up typhoid bacilli of greater bacterial density (750 million to 1 c.c.). Upon thirteen typhoid patients this suspension gave a distinct positive in ten. Ten also gave a positive Widal test, but not the same ten. Of nine malaria patients eight did not give a reaction. Of eight controls none reacted. The results are more easily seen in the accompanying table:

Suspension Typhoid Bacilli (Cutter's):

Number Tested	11			
Number Typhoid	6	Widal	0	Test 0
Number Malarias	2	Widal	0	Test 0
Number Other Fevers	3	Widal	0	Test 0

Suspension Ground Sensitized Typhoid Bacilli (Gay's):

Number Tested	30			
Number Typhoid	13	Widal	10	Test 10
Number Malaria	9	Widal	0	Test 0
Number Fever (Undiagnosed)	1	Widal	0	Test 1
Number Mixed Cases	8	Widal	0	Test 0

Thus the suspension of sensitized ground bacilli introduced intradermally gave reactions in as many patients as agglutination was observed in the Widal test, while the ordinary suspension failed to produce a characteristic response. The cause for this does not seem certain. It may have been due to a larger dose. Possibly the grinding of the bacterial bodies allowed a more marked toxin action at the site of injection. Of course this short series is not sufficient evidence upon which to base definite conclusions, but the findings seemed interesting and I have therefore brought it to your

attention in the hope that much more data may be available at the end of the next typhoid season.

References.

1. * Wolff-Eisner: Die Ophthalmal- und Cuti—diagnose der Tuberculose Wurzburg, 1908.
2. * Link: Ueber Hautreaktionen bei Impfungen mit abgetoteten Typhus, Paratyphus B, and Koll-Kulteren, Munchen, Med. Wchnschr., 1908, lv, 730.
3. * Deehan: The Typhoid Cutaneous Reaction. Univ. Penn. Med. Bull., 1909, xxii, 6.
4. * Floyd and Barker: The Typhoid Cutaneous Reaction, Am. Jour. Med. Sc., 1909, xxxviii, 188.
5. * Chauffard and Trosier: Reproduction experimentale des taches resees lenticulaires. Comp. rend. Soc. de biol., 1909, lxxvi, 519.
6. * Gay and Force: "A Skin Reaction" Indicative of Immunity Against Typhoid Fever Archives of Internal Medicine, Vol. 13, p. 471. No. 3.

THE PREGNANCY TOXAEMIAS—THEIR ETIOLOGY AND TREATMENT.**

By JAMES J. HOGAN, M. D., M. R. C. S., Eng., San Francisco.

The circulation in the blood of a pregnant woman of some, as yet unknown, toxic agent is the more generally accepted cause for the complex symptoms that we find present and while as yet no definite specific agent has been demonstrated we can at least see the effects of this toxemia in the different organs involved.

As any one part of this subject is so extensive I must content myself tonight to touch on the following phases:

First, that the circulation of this unknown toxic agent produces in certain organs, as the kidneys, liver and brain, definite pathological changes similar to those produced by toxic drugs, as chloroform, alcohol, phosphorous, etc. These changes are edema, cloudy swelling, fatty changes, hemorrhages and finally necrosis, in other words, changes that are produced when you interfere with the oxidation chemistry of the tissues. This oxidation chemistry can be interfered with in many ways, as interference with blood supply to an organ, the injection of acids in excess of the amount that can be oxidized and eliminated, and poisoning by certain toxic amines, as pyridin, cadaverine, and putrescence. Urea also in high concentration has the same effect. Recent experimental work has shown that these amines have as great a power in hydrating colloids as acids, and that the swelling so produced cannot be counteracted by the use of bases and salts as in the oedemas produced by acids but is relieved readily by the use of hypertonic sugars.

Secondly, that the signs and symptoms of pregnancy-toxemia to my mind are best explained in the following manner: That the circulation of these poisons produces definite pathological conditions in the organs involved, and the intensity of the symptoms depends on the organ involved and the degree of the intoxication. In the *medulla* you have the nausea and vomiting, the *brain* with drowsiness and convulsions, the *eye background* with dimness and loss of vision, the *liver* with

* Citations after Gay and Force.

** Read before the San Francisco County Medical Society, August, 1914.